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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/550,644 | 04/14/2000 | David F. Sorrells | 1744.0010009 | 9317 |

7590 06/05/2006

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EXAMINER

BHATTACHARYA, SAM

| ART UNIT | PAPER NUMBER |
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2617

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/550,644

Applicant(s)

SORRELLS ET AL.

Examiner

Sam Bhattacharya

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-74 is/are pending in the application.
- 4a) Of the above claim(s) 13-74 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-12 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date see Office Action.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements submitted on 3/14/06 and 4/13/06 have been considered by the examiner.

Drawings

2. The drawings were received on 3/14/06. These drawings are accepted.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-4 and 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US 6,404,758) in view of Mower (US 5,063,387).

Regarding claim 1, Wang discloses an apparatus and method for down-converting an electromagnetic signal, including performing a matched filtering/correlating operation by matched filter 130 on a portion of a signal; accumulating the result of the matched filtering/correlating operation by accumulator 140, and repeating the matched filtering/correlating and accumulating steps for additional portions of the carrier signal, whereby the accumulation results form a down-converted signal. See FIG. 2, col. 3, 7-20 and col. 5, line 54 – col. 6, line 5.

Wang fails to disclose that the matched filtering is performed on a portion of a carrier signal. However, in an analogous art, Mower discloses a circuit in which a matched filter 23

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performs filtering on a portion of a carrier signal. See FIG. 1 and col. 3, line 54 – col. 4, line 11. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus and method in Wang by incorporating the above-cited teaching in Mower for the purpose of providing a data signal to produce a compensated Doppler frequency.

Regarding claim 2, Wang discloses that the matched filtering/correlating operation includes the step of convolving an approximate half cycle of the carrier signal with a representation of itself. See col. 11, lines 1-13.

Regarding claims 3 and 4, Wang discloses that the matched filtering/correlating operation includes the step of multiplying by multiplier 247 an approximate half cycle of the signal by itself over a predetermined time interval and integrating by integrator 290 over a predetermined time interval. See FIG. 3b and col. 9, lines 12-36. Moreover, claim 4 recites an equation which corresponds to the limitations of claim 3, and is therefore rejected for the same reasons as claim 3.

Regarding claims 6 and 7, Wang discloses that the accumulating step includes transferring a portion of the energy contained in an approximate half cycle of the signal to an energy storage device or a capacitive storage device. See col. 2, lines 59-67.

Regarding claims 8 and 9, Wang discloses passing on the accumulation result to a reconstruction filter, which is an interpolation filter. See col. 2, lines 38-49.

Regarding claim 10, Wang discloses repeating the matched filtering and accumulating steps at a sub-harmonic rate $(k+1)$ of the signal. See FIG. 4 and col. 10, lines 30-41.

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Regarding claim 11, Wang discloses repeating the matched filtering and accumulating steps at an off-set ($k+2$) of a sub-harmonic rate of the signal. See col. 10, lines 42-49.

Regarding claim 12, Wang discloses performing matched filtering and accumulating for positive approximate half cycles ($k+1$) of the carrier signal and for inverted negative approximate half cycles ($k-1$) of the signal. See col. 11, lines 26-46.

Allowable Subject Matter

5. Claims 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the claim is objected to for the reasons stated in the previous Office action.

Response to Arguments

6. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Bhattacharya whose telephone number is (571) 272-7917. The examiner can normally be reached on Weekdays, 9-6, with first Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on (571) 272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sb


GEORGE ENG
SUPERVISORY PATENT EXAMINER